

## Claims

- [1] Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and a gas-liquid centrifugal separator for cleaning gases, especially air, comprising: an electric motor 433 disposed inside of a gas-liquid centrifugal separator 407, a centrifugal impeller 408 installed on an electric motor 433 through an impeller shaft 435 and disposed inside of a shroud 420 at a gas suction inlet 431, a bearing 434 supported with a an impeller shaft 435 for a centrifugal impeller 408, an over driver 436 installed on an electric motor 433, a liquid atomizer 403 and a grill 400 disposed on the front of a gas-liquid centrifugal separator 407 through a gas suction duct 405, a liquid tank 401 disposed with a liquid atomizer 403 through a venturing tube 402, a gas passage cylinder 413 disposed for fastening an electric motor 433 inside of a gas-liquid centrifugal separator 407, gas passage holes 450 formed on the circumference side of a gas passage cylinder 413, a separate plate 460 installed inside of a gas passage cylinder 413, a liquid drain plate 424 is installed on the bottom of a gas exhaust cylinder 413, a first liquid drain holes 422 formed on a liquid drain plate 424, a second liquid drain holes 423 formed on a liquid drain plate 424, a liquid drain vessel 419 disposed on the bottom of a gas passage cylinder 413, a frain room formed inside of a liquid drain vessel 419, a liquid drain trap 441 disposed on the bottom of a liquid drain vessel 419 through a liquid drain pipe 411, and a first vortex room 504 provided annually inside of a housing 409, a second vortex room 506 provided inside of a gas passage cylinder 413;, and a gas-liquid centrifugal separator 407 used for a dehumidification apparatus as an accessory parts in complex type air cleaner or air condition system.
- [2] As claimed in claim 1, comprising: spiral grooves 416 formed on the outside surface of a gas passage cylinder 413.
- [3] As claimed in claim 1, comprising: an over driver 436 utilized with the various transfer means including an oil surface friction transmission, a gear transmission et al. for increasing the rotation speed of a centrifugal impeller 408.
- [4] As claimed in claim 1, comprising: a centrifugal impeller 408 coupled with a stream guide 408A for generating strong vortex stream on the basis of low fluid friction resistance.
- [5] As claimed in claim 1, comprising: a humidity controller 442 installed on a clean gas outlet 432 for adjusting the humidity of fresh gas.
- [6] As claimed in claim 1, comprising: a liquid atomizer 403 utilized with the various atomizing means including a venturing tube, an ultra sonic vibration generator, and an air-liquid jet nozzle et al., and a liquid atomizer 403 installed

with a liquid circulation pump disposed from a liquid drain trap 441 to a liquid tank 401 through a liquid pipe, and a liquid atomizer 403 installed with vortex generating means for generating a strong vortex stream of fine liquid droplet inside of gas suction duct 405.

[7] As claimed in claim 1, comprising: a centrifugal impeller 408 utilized with a turbine impeller for generating centrifugal vortex stream in a gas-liquid centrifugal separator 407.

[8] As claimed in claim 1, Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and a gas-liquid centrifugal separator for disposing an electric motor outside of a gas-liquid centrifugal separator, comprising: an electric motor 433 installed on the outside of a gas-liquid centrifugal separator 407, an over driver 436 connected with an electric motor 433, an impeller shaft 435 rotatably fixed with an over driver 436, a centrifugal impeller 408 rotatably fixed on an impeller shaft 435, and a bearing 434 supported for a centrifugal impeller 408 on a gas passage cylinder 413.

[9] As claimed in claim 8, comprising: an impeller shaft 435 formed with an gas passage inside for passing a clean gas through inside of a shaft.

[10] As claimed in claim 1, Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and a gas-liquid centrifugal separator for scrubbing dust and harmful gases at a remote distance, comprising: a flexible hose 604 connected with a liquid atomizer 401 in the front of an gas-liquid centrifugal separator 407 through a gas inlet duct 405.

[11] As claimed in claim 1, Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and a gas-liquid centrifugal separator for cleaning the exhaust gas of chimney in industrial facility, comprising: a vortex cleaning room 703A disposed in the front of a gas-liquid centrifugal separator 407 through a gas suction duct 405, and a liquid atomizer 703 connected with a vortex cleaning room 703A through a pipe, an air blower 794 connected with a vortex cleaning room 703A through a pipe for operating an air-liquid jet nozzle, and a liquid supply pump 796 connected with a vortex cleaning room 703A through a liquid pipe, a liquid tank 701 connected with a liquid supply pump 796 through a liquid pipe, a liquid circulate pump 792 connected with a liquid tank 701 through a liquid pipe, a liquid cleaner 790 connected with a liquid circulate pump 792 through a liquid pipe, a liquid drain trap 441 connected with a liquid cleaner 790.

[12] Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and air-liquid centrifugal separator for cleaning the suction air of a turbo charger in an automobile engine, comprising: an air-liquid centrifugal separator 807 disposed with a grill 800 at the air inlet of an engine, a centrifugal impeller 808

supported with a bearing 834 inside of a an air-liquid centrifugal separator 807, a turbine 833A connected with a centrifugal impeller 808 through an impeller shaft 835, a liquid atomizer 803 disposed in the front of an air-liquid centrifugal separator 807 through an air suction duct 805, an air passage cylinder 813 disposed inside of an air-liquid centrifugal separator 807, several air passage holes 850 formed on the circumference side of an air passage cylinder 813, a clean air outlet 832 installed on the side of an air passage cylinder 813, a liquid drain plate 824 is installed on the bottom of a gas exhaust cylinder 813, a first liquid drain holes 922 formed on a liquid drain plate 824, a second liquid drain holes 823 formed on a liquid drain plate 824, a liquid drain trap 841 installed on the bottom of a liquid drain vessel 819, and a first vortex room 804 formed annually inside of a housing 809, a second vortex room 806 formed inside of an air passage cylinder 813, and a liquid filter 890 connected with a liquid drain trap 841 through a liquid pipe 891, a circulate pump 892 connected with a liquid filter 890 through a liquid pipe 891, a liquid tank 801 connected with a circulate pump 892 through a liquid pipe 891, a liquid atomizer 803 connected with a liquid tank 801 through a liquid pipe 891.

- [13] Wet type air cleaner utilizing a centrifugal impeller with a liquid atomizer and gas-liquid centrifugal separator for cleaning exhaust gas from automobile engine, comprising: a gas-liquid centrifugal separator connected with an exhaust gas pipe 904 of an engine, a centrifugal impeller 908 supported with a bearing 934 inside of a gas-liquid centrifugal separator, a turbine 933A connected with a centrifugal impeller 908 through an impeller shaft 935, a liquid atomizer 903 disposed in the front of a gas-liquid centrifugal separator 907 through an exhaust gas suction duct 905, a gas passage cylinder 913 located inside of a gas-liquid centrifugal separator 907, several gas passage holes 950 formed on the circumference side of a gas passage cylinder 913, a clean gas outlet 932 installed on the side of a gas exhaust cylinder 913, a liquid drain plate 924 is installed on the bottom of a gas exhaust cylinder 913, a first liquid drain holes 922 formed on a liquid drain plate 924, a second liquid drain holes 923 formed on a liquid drain plate 924, a liquid drain vessel 919 disposed on the bottom of a gas passage cylinder 913, a liquid drain trap 941 installed on the bottom of a liquid drain vessel 919, and a first vortex room 904 formed annually in a housing 909, a second vortex room 906 formed inside of an exhaust gas passage cylinder 913, and a liquid filter 990 connected with a liquid drain trap 941 through a liquid pipe 991, a liquid circulate pump 992 connected with a liquid filter 990 through a liquid pipe 991, a liquid tank 901 connected with a circulate pump 992 through a liquid pipe 991, a liquid atomizer 903 connected with a liquid tank 901 through a liquid pipe 991.